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AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A method for preparing a biologically compatible polymer scaffold for growing mammalian cells in situ when such scaffold is placed in a human which comprises:

(a) supplying a liquid solution containing a biologically compatible polymer dissolved in said liquid to a liquid outlet placed in the vicinity of a surface~~, where said polymer is not electrically conductive~~;

(b) selecting a mammalian cell;

(c) subjecting said liquid solution supplied to said outlet and issuing from the outlet to an electric field to cause said liquid to form polymer fibres which are attracted to and deposit onto the surface to form a polymer fibre scaffold for the formation of biological tissue or precursors thereto comprising a three-dimensional continuous network of intercommunicating fibre portions;

(d) controlling fiber production of the polymer fibre scaffold such that the mammalian cell diameter is from about 5 to about 10 times greater than the fibre diameter; and the polymer fiber scaffold comprises ~~with~~ gaps between adjacent fibre portions, wherein said gaps are in the range of from about 2.0 μm to about 500 μm in size and wherein the diameter of the polymer fibres is from about 0.2 μm to about [[100.0]] 2 μm and wherein the fibre scaffold comprises a lattice or network-like formation; and

[[(c)]] (e) applying the mammalian cells to the fibre scaffold~~, wherein the mammalian cell diameter is from 5 to 10 times greater than the fibre diameter~~ so as to facilitate at least one cell process selected from the group consisting of attachment, movement, growth, proliferation, and differentiation.

2. (cancelled)

3-4. (cancelled)

5. (currently amended) The method according to claim 1, wherein the cell diameter is in the range of from about 2 to about 20 microns and the fibre diameter is in the range of from about 1 to about [[2]] 10 microns.

6. (currently amended) The method according to claim 1, wherein the cell diameter is about 10 microns and the fibre diameter is from about 1 to about 2 microns.

7. (currently amended) The method according to claim 1, wherein the fibre diameter is from about 1 to about 2 microns.

8. (cancelled)

9. (previously presented) The method according to claim 1, wherein the fibre diameter is of comparable size to cell surface receptors of the cells.

10. (previously presented) The method according to claim 1, wherein the polymer is selected from the group consisting of polyactide (L:D isomer ratio 50:50) and polyactide (L:D isomer ratio 96:4).

11. (previously presented) The method according to claim 1, wherein the cells are human adherent cells.

12. (previously presented) The method according to claim 1, wherein the cells are human fibroblast cells.

13. (currently amended) The method according to claim 1 wherein the mammalian cells include human fibroblast cells, and the polymer fibre scaffold has a fibre diameter in the range of about 1 to about 2 microns with gaps between adjacent fibre portions, wherein said gap size is from about 50 microns to about 200 microns.

14. (currently amended) A method for preparing a biologically compatible polymer scaffold for growing human fibroblast cells in situ when such scaffold is placed in a human which comprises:

    (a) supplying a liquid solution containing a biologically compatible polymer dissolved in said liquid to a liquid outlet in the vicinity of a surface~~, where said polymer is not electrically conductive~~;

    (b) subjecting the liquid solution supplied to said outlet and issuing from the outlet to an electric field to cause the liquid solution to form polymer fibres which are attracted to and deposit onto said surface to form a polymer fibre scaffold comprising a three-dimensional continuous network of intercommunicating fibre portions with gaps between adjacent fibre portions, wherein said gaps are in the range of from about 10 μm to about 400 μm in size and wherein the diameter of the polymer fibres is from about 1.0 μm to about 2.0 μm and wherein the fibre scaffold comprises a lattice or network-like formation; and

    (c) applying the human fibroblast cells to the fibre scaffold, wherein said human fibroblast cells grow or elongate preferentially along the fibres of the fibre scaffold.

15. (previously presented) The method according to claim 20, wherein the mammalian cells comprise human bone marrow fibroblast cells, and wherein the mean fibre diameter of fibres in the polymer fibre scaffold is about 3 microns with the mean size of gaps between adjacent fibre portions of about 16 microns.

16. (currently amended) A method for preparing a biologically compatible polymer scaffold for facilitating differentiation of stem cells in situ when such scaffold is placed in a human which comprises: supplying a liquid solution containing a biologically compatible polymer dissolved in said liquid to a liquid outlet placed in the vicinity of a surface~~, where said polymer is not electrically conductive~~; subjecting said biologically compatible polymer liquid supplied to said outlet and issuing from the outlet to an electrical field to cause the liquid to form polymer fibres which are attracted to and deposit onto the substrate to form a polymer fibre scaffold comprising a three-dimensional continuous network of

intercommunicating fibre portions and wherein the fibre scaffold comprises a lattice or network-like formation; wherein the fibre diameter is about 25 μm and the gap size is from about 140 μm to about 200 μm; and applying said stem cells to said polymer fibre scaffold without addition of extrinsic biological factors.

17. (cancelled)

18. (currently amended) A method for preparing a biologically compatible polymer scaffold for facilitating differentiation of human bone marrow fibroblastic cells in situ when such scaffold is placed in a human which comprises:

(a) supplying a liquid solution of a biologically compatible polymer dissolved in said liquid to a liquid outlet placed in the vicinity of a surface~~, wherein said polymer is not electrically conductive~~;

(b) subjecting said liquid solution supplied to said outlet and issuing from the outlet to an electric field to cause the liquid solution to form polymer fibres which are attracted to and deposit onto the surface to form a polymer fibre scaffold comprising a three-dimensional continuous network of intercommunicating fibre portions with gaps between adjacent fibre portions, wherein said gaps are [[in]] about 16 μm in size [[and]] wherein the diameter of the polymer fibres is about 310 μm and wherein the fibre scaffold comprises a lattice or network-like formation; and

(c) applying the cells to the fibre scaffold without addition of extrinsic biological factors wherein, after a period of time, the resulting human bone marrow fibroblastic cells have a morphology resembling nerve cells.

19. (previously presented) The method according to claim 16, wherein the polymer comprises polycaprolactone.

20. (currently amended) A method for preparing a biological compatible polymer scaffold for growing mammalian cells in situ when such scaffold is placed in a human which comprises:

(a) supplying a liquid solution containing a biologically compatible polymer dissolved therein to a liquid outlet in the vicinity of a surface~~, where said polymer is not electrically conductive~~;

(b) subjecting said liquid solution supplied to said outlet and issuing from the outlet to an electric field to cause the liquid to form polymer fibers which are attracted to and deposit onto the surface to form a polymer fibre scaffold comprising a three-dimensional continuous network of intercommunicating fibre portions, wherein said gaps are in the range of from about 10.0 μm to about 500 μm in size and wherein the diameter of the polymer fibres is from about 0.2 μm to about 100.0 μm wherein the fibre scaffold comprises a lattice or network-like formation; and

(c) applying mammalian cells to the fibre scaffold, to facilitate at least one cell process selected from the group consisting of growth preferentially along the fibre portions, attachment to the fibre portions, elongation preferably along the fibre portions, and differentiation.

21-24 (cancelled)

25. (previously presented) The method according to claim 54 , wherein the fibre scaffold is arranged to be implanted in a mammalian body or placed on or in a wound.

26. (previously presented) The method according to claim 54, wherein the surface is a target area of a mammalian body or placed on or in a wound.

27. (previously presented) The method according to claim 1, wherein the cells are applied by a seeding process.

28. (previously presented) The method according to claim 1, wherein the cells are applied to said polymer scaffold by spraying.

29. (currently amended) The method according to claim 1, wherein said liquid solution consists essentially of cell culture medium in which said biologically compatible polymer is dissolved.

30. (previously presented) The method according to claim 28, wherein said mammalian cells are added to said liquid solution prior to the liquid solution being supplied to said outlet.

31-34 (cancelled)

35. (previously presented) The method according to claim 1, wherein the fibre gap is greater than approximately half the mammalian cell diameter.

36. (previously presented) The method according to claim 1, wherein the fibre diameter is less than the fibre gap.

37-48 (cancelled)

49. (previously presented) The method according to claim 1, wherein the surface is a target area of a mammalian body and the fibre scaffold is produced in situ.

50. (previously presented) The method according to claim 15, wherein the cells are applied by a seeding process.

51. (previously presented) The method according to claim 16, wherein the cells are applied by spraying.

52. (previously presented) The method according to claim 26, wherein the target area is a wound.

53. (previously presented) The method according to claim 49, wherein the target area is a wound.

54. (currently amended) A method for preparing a biologically compatible polymer scaffold for growing mammalian cells in situ when such scaffold is placed in a mammal which comprises:

(a) supplying a polymer melt consisting essentially of a biologically compatible polymer ~~which is not electrically conductive~~ to a liquid outlet placed in the vicinity of a surface, wherein the liquid outlet is kept at the temperature of the melt;

(b) subjecting said polymer melt supplied to said outlet and issuing from the outlet to an electric field to cause said polymer melt to form polymer fibres which are attracted to and deposit onto the surface to form a polymer fibre scaffold comprising a three- dimensional continuous network of intercommunicating fibre portions with gaps between adjacent fibre portions, wherein said gaps are in the range of from about 25 μm to about 3000 μm in size and wherein the diameter of the polymer fibers is from about 2 μm to about 500 μm and wherein the fibre scaffold comprises a lattice or network-like formation; and

(c) applying mammalian cells to the fibre scaffold, wherein the mammalian cell diameter is from 5 to 10 times greater than the fibre diameter so as to facilitate at least one process selected from the group consisting of attachment, movement, growth, proliferation, and differentiation.

55. (Original) The method according to claim 1, wherein the liquid is selected from the group consisting of water, acetone, ethanol, and cell culture medium.

56. (Original) The method according to claim 55, wherein said cell culture medium is DMEM.